Fig A. Sensitivity of the prediction for different fetal fraction and microdeletion size.

Read count was set to 20M in each sample. Detections 2Mb away from critical region are reported.
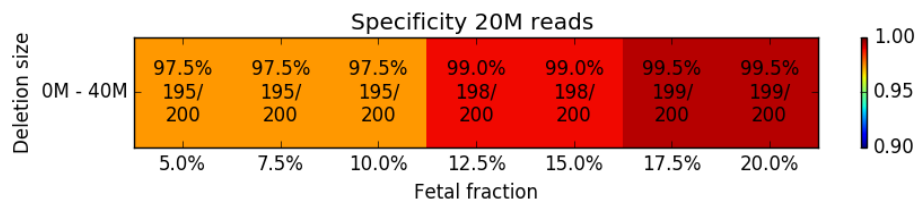

Fig B. Specificity of the prediction for different fetal fraction and microdeletion size.

Read count was set to 20M in each sample. Detections 2Mb away from critical region are reported.
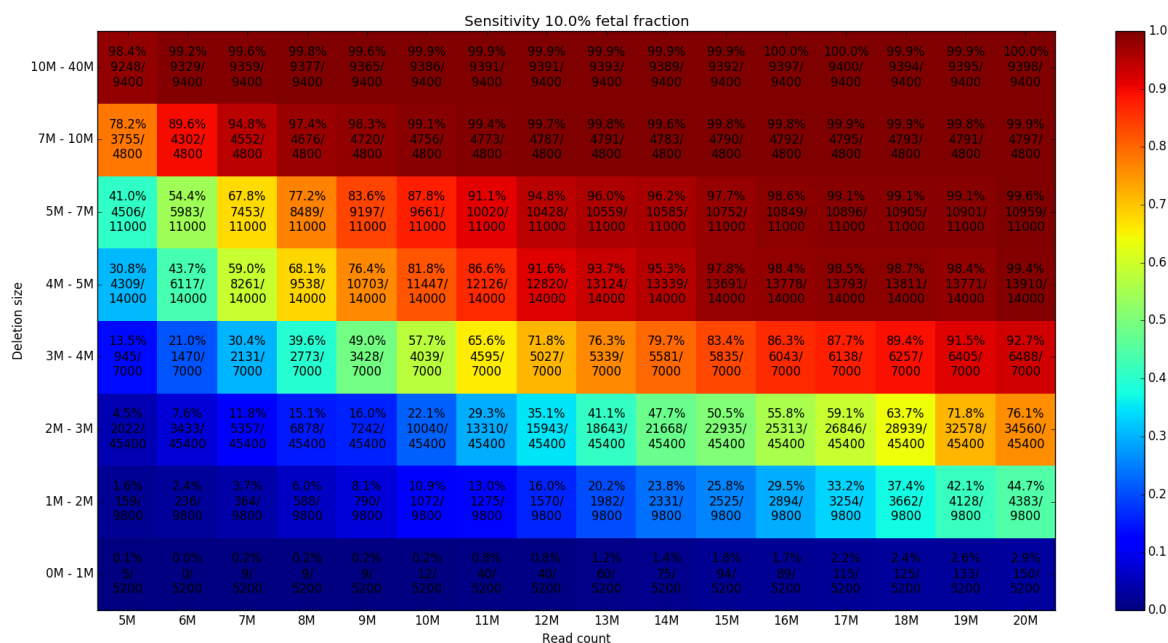
Fig C. Sensitivity of the prediction for different read count and microdeletion size.

Fetal fraction was set to 10% for all samples. Detections 2Mb away from critical region are reported.
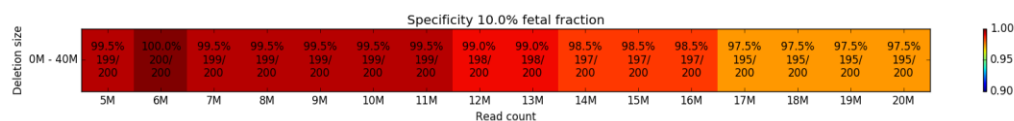
Fig D. Specificity of the prediction for different read count and microdeletion size.

Fetal fraction was set to 10% for all samples. Detections 2Mb away from critical region are reported.
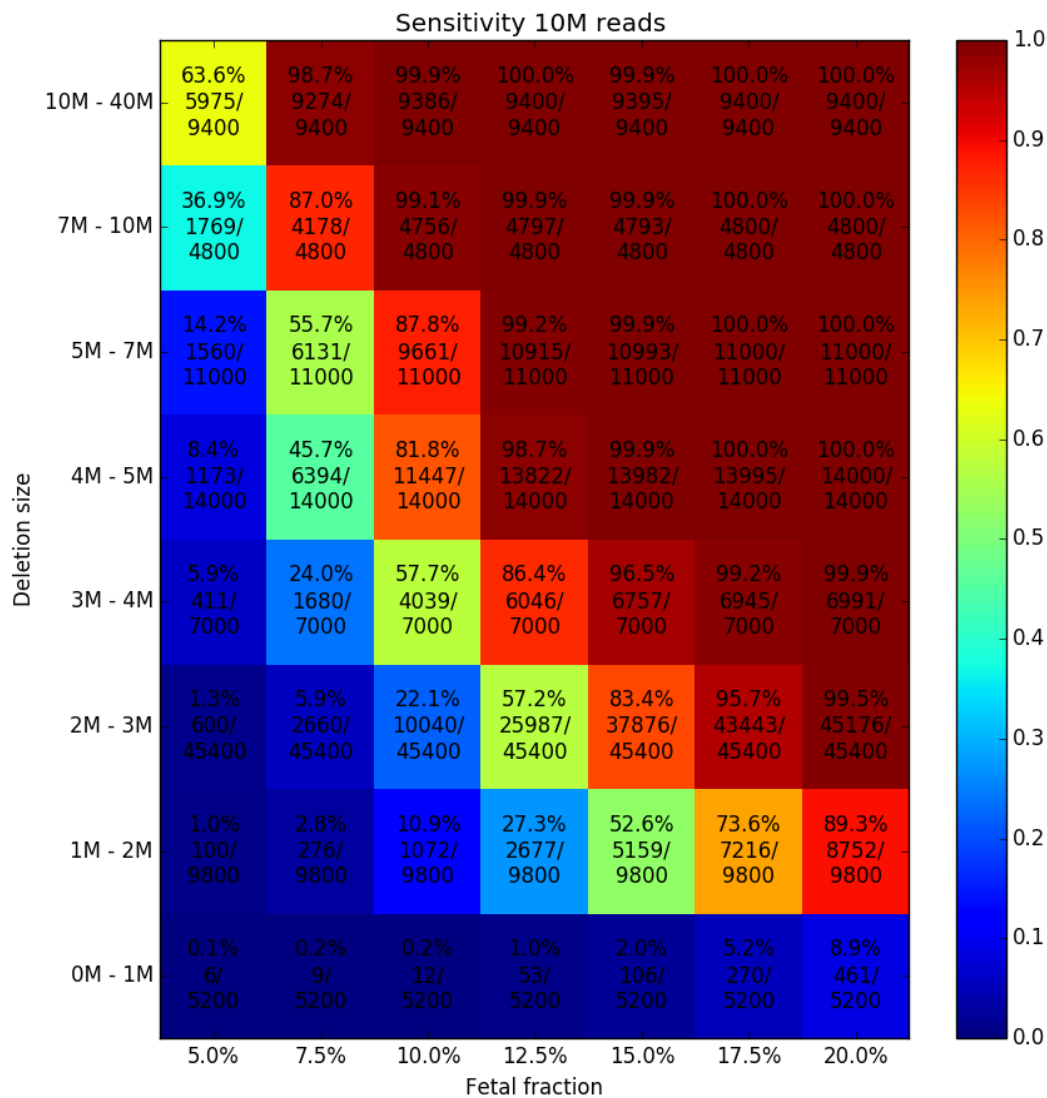
Fig E. Sensitivity of the prediction for different fetal fraction and microdeletion size.

Read count was set to 10M in each sample. Detections 2Mb away from critical region are reported.
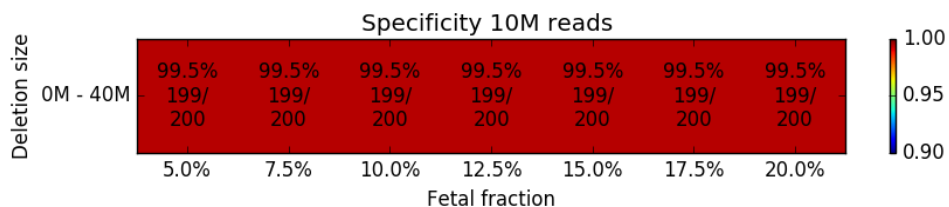
Fig F. Specificity of the prediction for different fetal fraction and microdeletion size.

Read count was set to 10M in each sample. Detections 2Mb away from critical region are reported.

Fig G. Sensitivity of the prediction for different fetal fraction and microdeletion size.

Read count was set to 10M in each sample. Detections 2Mb away from critical region are NOT reported.

Fig H. Specificity of the prediction for different fetal fraction and microdeletion size.

Read count was set to 10M in each sample. Detections 2Mb away from critical region are NOT reported.
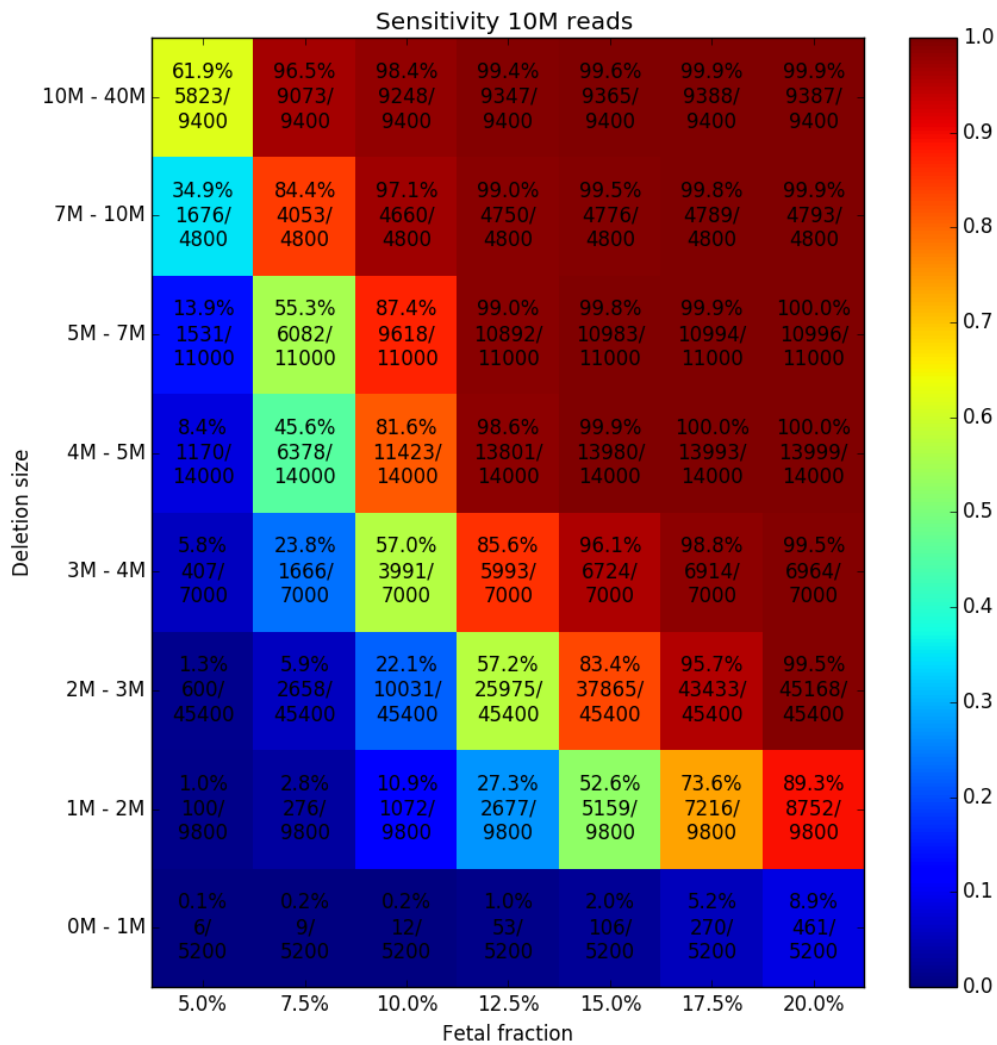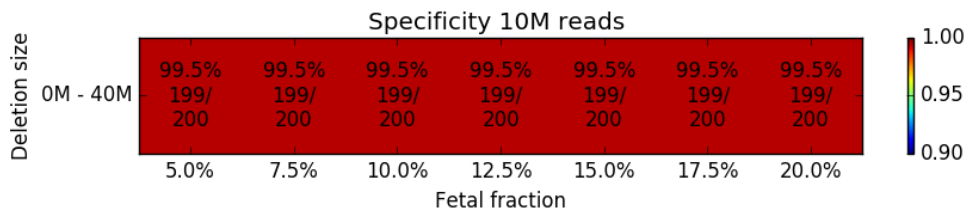
Sensitivity 20M reads 1p36 microdeletion

Deletion size	5.0%	7.5%	10.0%	12.5%	15.0%	17.5%	20.0%
10M - 40M	73.2% 732/1000	100.0% 1000/1000	100.0% 1000/1000	100.0% 1000/1000	100.0% 1000/1000	100.0% 1000/1000	100.0% 1000/1000
7M - 10M	72.2% 1732/2400	99.6% 2390/2400	100.0% 2400/2400	100.0% 2400/2400	100.0% 2400/2400	100.0% 2400/2400	100.0% 2400/2400
5M - 7M	61.2% 1835/3000	97.2% 2916/3000	99.9% 2996/3000	100.0% 2999/3000	100.0% 3000/3000	100.0% 3000/3000	100.0% 3000/3000
4M - 5M	51.0% 1224/2400	93.0% 2233/2400	99.7% 2393/2400	100.0% 2400/2400	100.0% 2400/2400	100.0% 2400/2400	100.0% 2400/2400
3M - 4M	33.6% 873/2600	78.4% 2039/2600	96.1% 2499/2600	99.5% 2588/2600	100.0% 2600/2600	100.0% 2600/2600	100.0% 2600/2600
2M - 3M	19.5% 584/3000	45.6% 1369/3000	76.0% 2281/3000	91.7% 2750/3000	97.3% 2919/3000	99.2% 2975/3000	99.8% 2995/3000
1M - 2M	7.3% 291/4000	19.4% 777/4000	41.7% 1669/4000	68.9% 2756/4000	87.0% 3481/4000	95.1% 3804/4000	98.5% 3939/4000
0M - 1M	2.6% 42/1600	3.8% 61/1600	6.6% 105/1600	11.9% 190/1600	20.6% 329/1600	27.3% 436/1600	30.4% 487/1600

Fetal fraction (x-axis), Deletion size (y-axis)

Sensitivity 20M reads Wolf - Hirschhorn

Deletion size	5.0%	7.5%	10.0%	12.5%	15.0%	17.5%	20.0%
10M - 40M	61.0% 1220/2000	93.5% 1870/2000	99.1% 1981/2000	99.6% 1992/2000	100.0% 2000/2000	100.0% 2000/2000	100.0% 2000/2000
7M - 10M	55.9% 783/1400	92.5% 1295/1400	98.5% 1379/1400	99.1% 1387/1400	100.0% 1400/1400	100.0% 1400/1400	100.0% 1400/1400
5M - 7M	45.5% 364/800	89.2% 714/800	98.5% 788/800	99.9% 799/800	100.0% 800/800	100.0% 800/800	100.0% 800/800
4M - 5M	32.0% 320/1000	79.2% 792/1000	96.3% 963/1000	99.3% 993/1000	100.0% 1000/1000	100.0% 1000/1000	100.0% 1000/1000
3M - 4M	24.2% 580/2400	65.1% 1563/2400	92.1% 2211/2400	99.0% 2377/2400	99.8% 2396/2400	99.9% 2397/2400	99.9% 2398/2400
2M - 3M	6.0% 60/1000	32.8% 328/1000	62.1% 621/1000	91.3% 913/1000	99.2% 992/1000	100.0% 1000/1000	100.0% 1000/1000
1M - 2M	2.8% 28/1000	22.1% 221/1000	47.3% 473/1000	76.0% 760/1000	94.7% 947/1000	98.5% 985/1000	99.7% 997/1000
0M - 1M							

Fetal fraction (x-axis), Deletion size (y-axis)

Sensitivity 20M reads Willi / Angelman

Deletion size	5.0%	7.5%	10.0%	12.5%	15.0%	17.5%	20.0%
10M - 40M	57.5% 115/200	98.5% 197/200	100.0% 200/200	100.0% 200/200	100.0% 200/200	100.0% 200/200	100.0% 200/200
7M - 10M	47.7% 286/600	95.8% 575/600	100.0% 600/600	100.0% 600/600	100.0% 600/600	100.0% 600/600	100.0% 600/600
5M - 7M	38.3% 2297/6000	89.3% 5359/6000	99.5% 5967/6000	100.0% 5999/6000	100.0% 6000/6000	100.0% 6000/6000	100.0% 6000/6000
4M - 5M	35.6% 3484/9800	88.6% 8680/9800	99.5% 9748/9800	100.0% 9800/9800	100.0% 9800/9800	100.0% 9800/9800	100.0% 9800/9800
3M - 4M	24.0% 48/200	72.0% 144/200	98.0% 196/200	99.5% 199/200	100.0% 200/200	100.0% 200/200	100.0% 200/200
2M - 3M							
1M - 2M							
0M - 1M	0.0% 0/1200	0.0% 0/1200	0.1% 1/1200	0.0% 0/1200	0.0% 0/1200	0.0% 0/1200	0.0% 0/1200

Fetal fraction (x-axis), Deletion size (y-axis)

Sensitivity 20M reads Cri-du-chat

Deletion size	5.0%	7.5%	10.0%	12.5%	15.0%	17.5%	20.0%
10M - 40M	63.3% 3925/6200	99.9% 6196/6200	100.0% 6200/6200	100.0% 6200/6200	100.0% 6200/6200	100.0% 6200/6200	100.0% 6200/6200
7M - 10M	52.2% 209/400	97.8% 391/400	100.0% 400/400	100.0% 400/400	100.0% 400/400	100.0% 400/400	100.0% 400/400
5M - 7M	51.3% 616/1200	96.5% 1158/1200	100.0% 1200/1200	100.0% 1200/1200	100.0% 1200/1200	100.0% 1200/1200	100.0% 1200/1200
4M - 5M	38.9% 311/800	88.4% 707/800	99.8% 798/800	100.0% 800/800	100.0% 800/800	100.0% 800/800	100.0% 800/800
3M - 4M	30.2% 181/600	75.8% 455/600	97.7% 586/600	99.8% 599/600	100.0% 600/600	100.0% 600/600	100.0% 600/600
2M - 3M	18.5% 74/400	57.2% 229/400	89.0% 356/400	98.5% 394/400	99.5% 398/400	100.0% 400/400	100.0% 400/400
1M - 2M	4.2% 17/400	19.5% 78/400	44.2% 177/400	72.2% 289/400	90.0% 360/400	97.5% 390/400	99.0% 396/400
0M - 1M							

Fetal fraction (x-axis), Deletion size (y-axis)

Fig I. Sensitivity of the prediction for different fetal fraction and size of microdeletion for different syndromes.

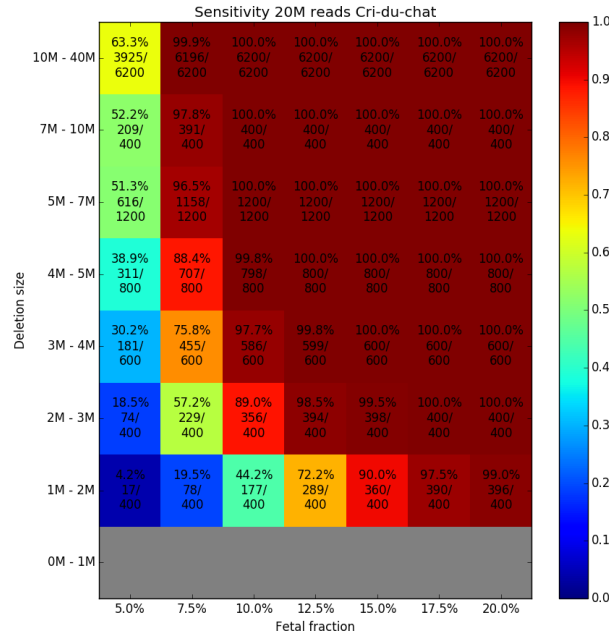Read count was set to 20M in each sample. Detections 2M away from critical region are NOT reported.

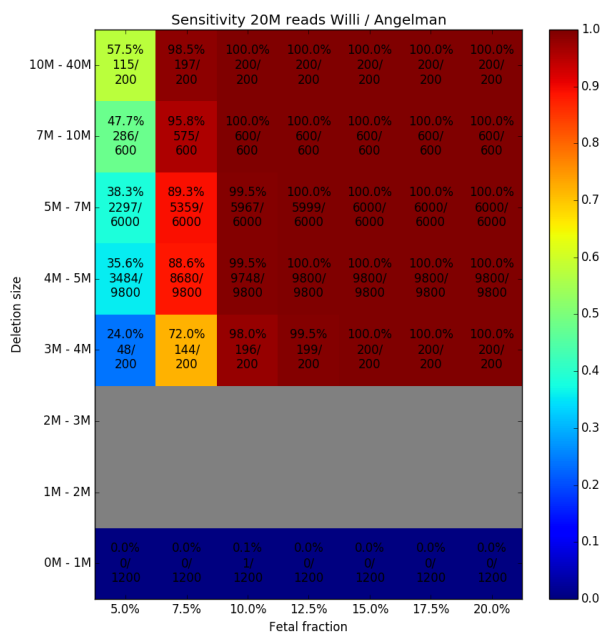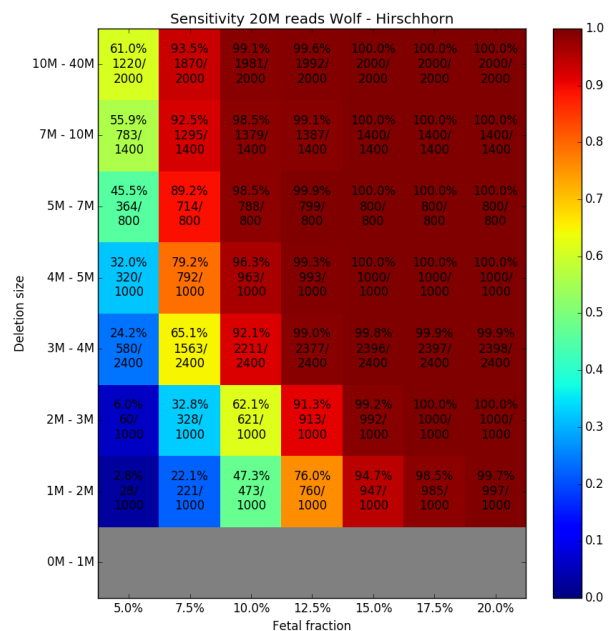## Sensitivity 10.0% fetal fraction — 1p36 microdeletion

Deletion size \ Read count	5M	6M	7M	8M	9M	10M	11M	12M	13M	14M	15M	16M	17M	18M	19M	20M
10M – 40M	96.7% 967/1000	99.2% 992/1000	99.9% 999/1000	99.8% 998/1000	99.9% 999/1000	100.0% 1000/1000	100.0% 1000/1000	100.0% 1000/1000	100.0% 1000/1000	100.0% 1000/1000	100.0% 1000/1000	100.0% 1000/1000	100.0% 1000/1000	100.0% 1000/1000	100.0% 1000/1000	100.0% 1000/1000
7M – 10M	76.9% 1846/2400	90.7% 2176/2400	96.8% 2322/2400	98.7% 2369/2400	99.5% 2389/2400	99.8% 2395/2400	99.9% 2397/2400	100.0% 2399/2400	100.0% 2400/2400	100.0% 2400/2400	100.0% 2400/2400	100.0% 2400/2400	100.0% 2400/2400	100.0% 2400/2400	100.0% 2400/2400	100.0% 2400/2400
5M – 7M	44.7% 1340/3000	61.7% 1850/3000	76.1% 2282/3000	86.2% 2587/3000	93.2% 2797/3000	96.7% 2901/3000	98.2% 2946/3000	99.3% 2977/3000	99.7% 2990/3000	99.6% 2988/3000	99.8% 2993/3000	99.8% 2994/3000	99.8% 2995/3000	99.8% 2994/3000	99.8% 2993/3000	99.9% 2996/3000
4M – 5M	31.2% 750/2400	50.1% 1202/2400	67.4% 1617/2400	79.6% 1910/2400	87.9% 2109/2400	93.3% 2239/2400	96.0% 2303/2400	98.2% 2356/2400	98.7% 2369/2400	99.2% 2382/2400	99.5% 2389/2400	99.6% 2391/2400	99.8% 2394/2400	99.9% 2397/2400	100.0% 2400/2400	99.7% 2393/2400
3M – 4M	13.8% 181/2600	19.9% 517/2600	32.1% 834/2600	44.0% 1145/2600	55.3% 1438/2600	67.6% 1757/2600	76.9% 2000/2600	83.5% 2172/2600	87.3% 2271/2600	90.1% 2343/2600	92.5% 2406/2600	93.0% 2418/2600	93.5% 2431/2600	95.0% 2469/2600	96.1% 2498/2600	96.1% 2499/2600
2M – 3M	4.3% 130/3000	9.0% 269/3000	16.9% 508/3000	23.0% 689/3000	30.2% 907/3000	38.4% 1153/3000	44.5% 1336/3000	49.5% 1484/3000	56.1% 1682/3000	59.2% 1777/3000	63.6% 1909/3000	66.3% 1988/3000	69.5% 2084/3000	71.7% 2151/3000	73.1% 2194/3000	76.0% 2281/3000
1M – 2M	0.9% 36/4000	1.9% 76/4000	2.5% 100/4000	4.8% 191/4000	7.7% 306/4000	11.2% 448/4000	14.0% 560/4000	16.4% 656/4000	19.9% 797/4000	26.1% 1042/4000	27.7% 1107/4000	30.0% 1202/4000	32.8% 1313/4000	36.4% 1456/4000	39.0% 1561/4000	41.7% 1669/4000
0M – 1M	0.3%	0.3%	0.2%	0.3%	0.2%	0.4%	1.0%	1.3%	1.0%	1.6%	3.7%	4.0%	5.1%	5.9%	3.3%	6.8%

Sensitivity 10.0% fetal fraction — Wolf - Hirschhorn

Deletion size \ Read count	5M	6M	7M	8M	9M	10M	11M	12M	13M	14M	15M	16M	17M	18M	19M	20M
10M – 40M	90.3% 1806/2000	91.8% 1837/2000	91.2% 1824/2000	92.5% 1851/2000	89.8% 1797/2000	92.5% 1849/2000	92.8% 1855/2000	93.2% 1865/2000	93.3% 1866/2000	94.3% 1886/2000	96.0% 1920/2000	96.9% 1937/2000	97.4% 1947/2000	97.8% 1955/2000	98.2% 1964/2000	99.1% 1981/2000
7M – 10M	80.6% 1129/1400	87.8% 1229/1400	89.8% 1257/1400	91.1% 1276/1400	90.6% 1268/1400	92.1% 1289/1400	92.7% 1298/1400	93.6% 1310/1400	93.3% 1306/1400	93.6% 1310/1400	95.8% 1341/1400	96.9% 1357/1400	96.9% 1357/1400	96.9% 1356/1400	97.9% 1371/1400	98.5% 1379/1400
5M – 7M	54.5% 436/800	66.5% 532/800	74.6% 597/800	81.0% 648/800	84.5% 676/800	88.0% 704/800	90.1% 721/800	91.0% 728/800	91.9% 735/800	93.9% 751/800	95.0% 760/800	96.1% 769/800	97.0% 776/800	97.2% 778/800	97.6% 781/800	98.5% 788/800
4M – 5M	28.7% 287/1000	40.7% 407/1000	49.8% 498/1000	59.2% 592/1000	66.3% 663/1000	73.6% 736/1000	79.1% 791/1000	82.3% 823/1000	84.9% 849/1000	87.1% 871/1000	90.4% 904/1000	92.8% 928/1000	94.1% 941/1000	95.6% 956/1000	95.9% 959/1000	96.3% 963/1000
3M – 4M	18.0% 432/2400	25.6% 615/2400	33.1% 794/2400	41.6% 999/2400	50.6% 1214/2400	57.3% 1376/2400	64.8% 1554/2400	70.1% 1683/2400	73.9% 1774/2400	76.8% 1842/2400	80.0% 1920/2400	85.6% 2054/2400	87.0% 2088/2400	88.8% 2130/2400	90.6% 2175/2400	92.1% 2211/2400
2M – 3M	4.2% 42/1000	5.6% 56/1000	8.9% 89/1000	12.5% 125/1000	14.1% 141/1000	18.1% 181/1000	24.4% 244/1000	28.3% 283/1000	34.8% 348/1000	38.9% 389/1000	42.2% 422/1000	46.8% 468/1000	50.6% 506/1000	56.1% 561/1000	60.1% 601/1000	62.1% 621/1000
1M – 2M	1.9% 19/1000	2.2% 22/1000	4.9% 49/1000	8.4% 84/1000	8.3% 83/1000	9.9% 99/1000	14.0% 140/1000	17.5% 175/1000	22.8% 228/1000	24.1% 241/1000	28.4% 284/1000	32.4% 324/1000	36.6% 366/1000	41.3% 413/1000	44.9% 449/1000	47.3% 473/1000
0M – 1M	(no data)															

Sensitivity 10.0% fetal fraction — Cri-du-chat

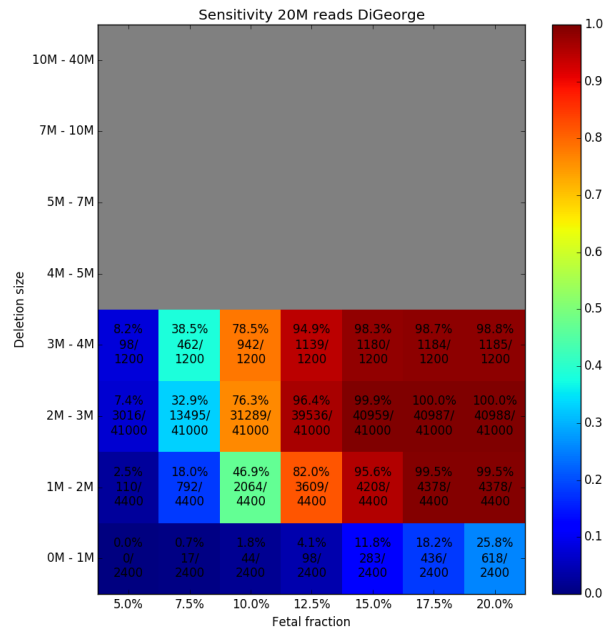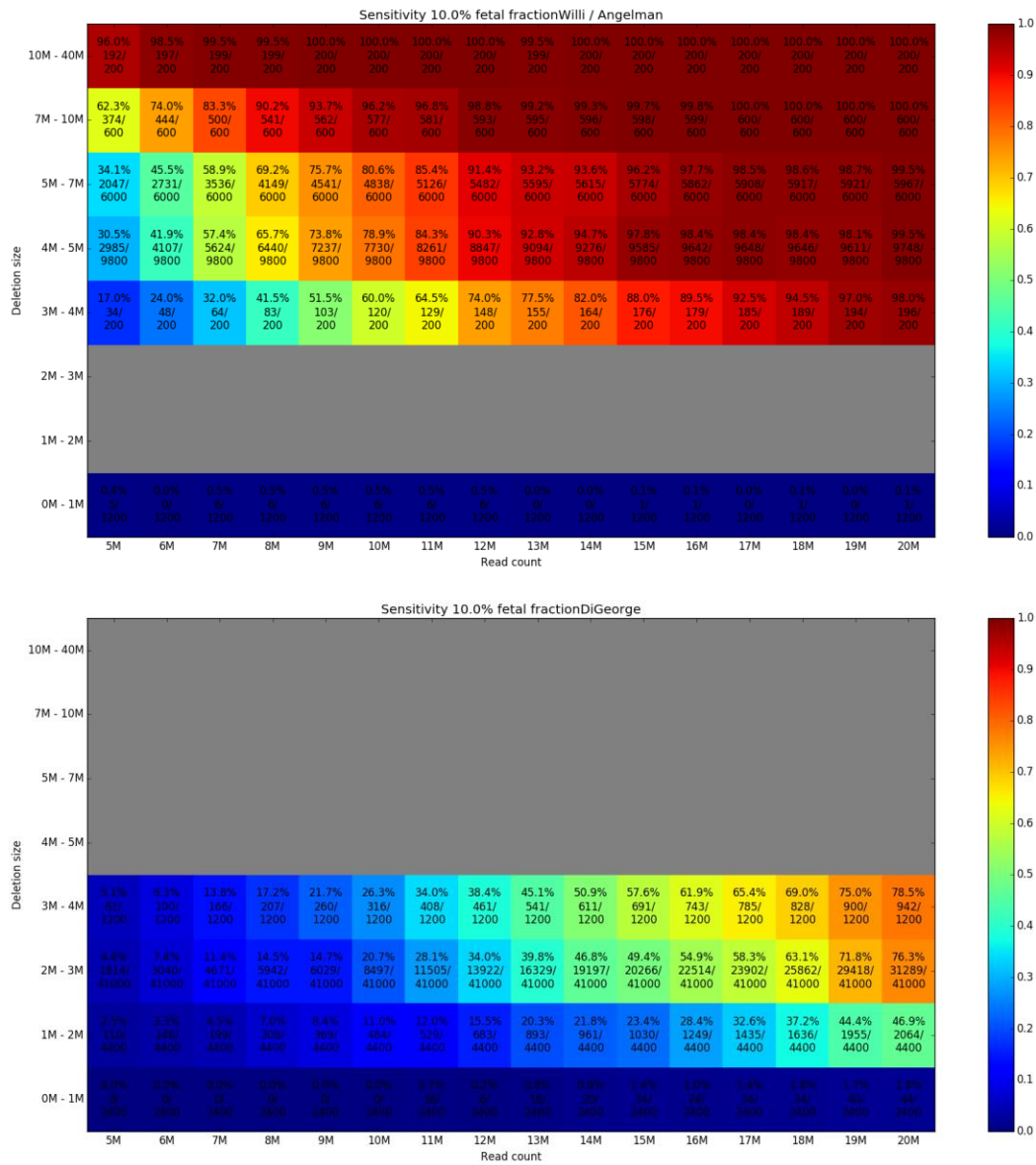| Deletion size \ Read count	5M	6M	7M	8M	9M	10M	11M	12M	13M	14M	15M	16M	17M	18M	19M	20M
10M – 40M	99.7% 6182/6200	99.9% 6191/6200	99.9% 6194/6200	100.0% 6199/6200	100.0% 6200/6200	100.0% 6200/6200	100.0% 6200/6200	100.0% 6200/6200	100.0% 6200/6200	100.0% 6200/6200	100.0% 6200/6200	100.0% 6200/6200	100.0% 6200/6200	100.0% 6200/6200	100.0% 6200/6200	100.0% 6200/6200
7M – 10M	78.2% 313/400	90.0% 360/400	96.0% 384/400	97.8% 391/400	99.0% 396/400	99.8% 399/400	99.8% 399/400	99.8% 399/400	100.0% 400/400	100.0% 400/400	100.0% 400/400	100.0% 400/400	100.0% 400/400	100.0% 400/400	100.0% 400/400	100.0% 400/400
5M – 7M	55.4% 665/1200	70.1% 841/1200	83.8% 1005/1200	89.5% 1074/1200	95.0% 1140/1200	97.9% 1175/1200	98.5% 1182/1200	99.5% 1194/1200	99.8% 1197/1200	99.8% 1198/1200	99.8% 1198/1200	99.9% 1199/1200	100.0% 1200/1200	100.0% 1200/1200	100.0% 1200/1200	100.0% 1200/1200
4M – 5M	35.5% 284/800	48.0% 384/800	63.1% 505/800	72.8% 582/800	83.1% 665/800	89.8% 718/800	93.2% 746/800	95.9% 767/800	97.8% 782/800	98.8% 790/800	98.9% 791/800	99.4% 795/800	99.4% 795/800	99.8% 798/800	99.5% 796/800	99.8% 798/800
3M – 4M	22.5% 135/600	29.3% 176/600	41.5% 249/600	53.3% 320/600	61.8% 371/600	70.3% 422/600	74.8% 449/600	83.0% 498/600	87.7% 526/600	92.5% 555/600	94.2% 565/600	95.8% 575/600	96.3% 578/600	96.5% 579/600	96.3% 578/600	97.7% 586/600
2M – 3M	8.5% 34/400	16.5% 66/400	22.0% 88/400	28.7% 115/400	39.0% 156/400	50.0% 200/400	54.8% 219/400	61.0% 244/400	68.5% 274/400	74.0% 296/400	81.8% 327/400	82.8% 331/400	85.2% 341/400	87.8% 351/400	88.0% 352/400	89.0% 356/400
1M – 2M	5.3% 21/400	5.5% 22/400	4.0% 16/400	6.2% 25/400	7.5% 30/400	10.2% 41/400	11.5% 46/400	14.0% 56/400	16.0% 64/400	21.8% 87/400	26.0% 104/400	29.8% 119/400	35.0% 140/400	39.2% 157/400	40.8% 163/400	44.2% 177/400
0M – 1M	(no data)															

Fig J. Sensitivity of the prediction for different read count and microdeletion size.

Fetal fraction was set to 10% for all samples. Detections 2M away from critical region are NOT reported.

Table A. Detailed description of the control samples and their detection accuracy.

name	read count	fetal fraction	detection	local z score	size	syndrome
NA17942	17.5M	4.15%	ND	ND	2.6M	DiGeorge
BA161216	25.27M	4.50%	ND/grey zone	-2,48	3M	DiGeorge
NA22936	15.9M	4.86%	D	-5,28	21M	1p36 microdeletion
NA14124	16.47M	5.11%	D	-8,35	17.7M	Cri-du-chat
BA34	19.24M	5.90%	ND	ND	0.9M	DiGeorge
NA09024	15.3M	7.30%	D	-4,82	5.3M	Willi / Angelman
NA09024	12.66M	7.60%	D	-5,79	5.3M	Willi / Angelman
NA17942	19.6M	8.70%	D	-4,29	2.6M	DiGeorge
BA34	11M	8.80%	ND	ND	0.9M	DiGeorge
NA00072	8.3M	9.10%	D	-16,98	9.3M	Wolf - Hirschhorn
NA22936	21.5M	9.85%	D	-10,66	21M	1p36 microdeletion
NA11515	19.31M	10.60%	D	-5,59	6M	Willi / Angelman
BA34	9.9M	10%	ND	ND	0.9M	DiGeorge
BA161216	20.59M	11.20%	D	-4,71	3M	DiGeorge
BA34	20.36M	11.50%	D	-5,34	0.9M	DiGeorge
BA34	8.9M	11.99%	D	-5,74	0.9M	DiGeorge
NA11515	16.79M	12.20%	D	-9,02	6M	Willi / Angelman
NA09024	24.3M	13.40%	D	-7,38	5.3M	Willi / Angelman
NA11515	15.71M	13.90%	D	-9,54	6M	Willi / Angelman
NA00072	8.4M	14.10%	D	-14,62	9.3M	Wolf - Hirschhorn
NA09024	15.37M	14.50%	D	-10.25/-5.58	5.3M	Willi / Angelman
NA11515	19.26M	14.60%	D	-7,72	6M	Willi / Angelman
NA00072	16.2M	16.40%	D	-14,3	9.3M	Wolf - Hirschhorn
NA17942	14.5M	16.69%	D	-7,11	2.6M	DiGeorge
BA34	21.52M	17.30%	D	-6,52	0.9M	DiGeorge
NA17942	19.45M	17.30%	D	-6,71	2.6M	DiGeorge
BA161216	20.39M	20.10%	D	-8,27	3M	DiGeorge
NA17942	20.39M	20.10%	D	-8,27	2.6M	DiGeorge
NA09024	16.1M	20.50%	D	-13.50/-5.71	5.3M	Willi / Angelman

Table B. The number, mean size of pathogenic regions, and resulting critical regions, as reported by our study and DECIPHER database.

The number of pathogenic regions overlapping its corresponding critical region is reported in brackets. Finally, the number of pathogenic deletions from DECIPHER database that does not overlap ISCA database is low.

Identification of a syndrome		Number of pathogenic deletions		Mean size of pathogenic deletions	
Band	Name	ISCA	DECIPHER	ISCA	DECIPHER
1p36	1p36 deletion	102 (100)	54 (52)	4,131,271	3,174,263
4p16.3	Wolf-Hirschhorn	48 (48)	27 (27)	6,713,778	4,819,991
5p15	Cri-du-chat	50 (50)	24 (24)	14,887,247	8,873,724
15q11	Angelman / Prader-Willi	90 (90)	133 (133)	5,061,279	2,534,265
22q11.21	DiGeorge	280 (245)	136 (120)	2,368,692	2,444,038

Critical regions		Pathogenic deletions from DECIPHER not in ISCA critical region
ISCA	DECIPHER	
chr1: 564,424 - 21,598,492	chr1: 120,840 - 22,542,549	3
chr4: 85,040 - 2,010,761	chr4: 71,552 - 5,506,588	2
chr5: 1 - 15,678,560	chr5: 113,576 - 18,992,827	2
chr15: 22,779,922 - 28,559,437	chr15: 22,373,311 - 28,560,803	2
chr22: 18,661,724 - 21,505,417	chr22: 18,890,162 - 21,464,119	15